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ABSTRACT

This paper reports the results of a program-evaluation process used by faculty of an undergraduate teacher education department in a mid-sized university; reports findings related to how program participants socially constructed the concept of Model-Based Instruction (MBI) over 9 years; and discusses how individuals constructed the concept of MBI. Participants in the program were teachers in the field who worked with preservice students, university educators who taught in the professional semesters, and student teachers. Participants completed several interviews on what MBI meant to them and how they would explain it. Data analysis indicated that the social construction of MBI has gone through three stages of concept development and is now in the fourth. At different stages, certain understandings of MBI seem more pervasive. Results highlighted six concept-based categories of MBI. There was some relationship between when practicing teachers entered the university program and their concept of MBI. Some forms and practices used in the program (e.g., student observation forms) tended to promote concepts of MBI that did not parallel the concept being taught in class. The structure of the second professional semester was based on and reinforced earlier concepts of MBI. The study noted that MBI is only a concept which will continue to change and grow to provide a better fit for the work being done. (SM)

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Evaluating a Teacher Education Program: A Study of the Social and Personal Construction of the Concept "Model-Based Instruction"

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at the 1999 Annual Meeting
of the American Educational Research Association
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Abstract

As the basis of a roundtable discussion, the paper has three purposes: (1) to report the results of a program evaluation process used by education faculty in a mid-sized university, (2) to report findings related to how program participants socially constructed the concept of Model-Based Instruction (MBI) over a nine year time span, and (3) to report findings related to how individuals have constructed the concept of MBI. Briefly, the social construction of MBI seems to have gone through three stages and now is in its fourth. The varied individual constructs of MBI can generally be sorted into one of six categories ranging from a relative naive concept of MBI to one that holds MBI as a comprehensive framework for planning and evaluating all classroom instruction.

Evaluating a Teacher Education Program: A Study of the Social and Personal Construction of the Concept "Model-Based Instruction"

This paper has three purposes. One is to report for discussion the results of a program evaluation process conducted by faculty of an undergraduate teacher education department in a mid-sized midwestern university. Because our method of evaluation, cognitive-based action research, led to insights and program improvement that may not have come from other methods, we think the process merits discussion with a larger audience. But this first purposes also serves as a vehicle for the second and third purposes, both of which take the paper beyond program evaluation and improvement into the more abstract territory of concept development and knowledge construction. Specifically, we'll report for discussion what we found during our evaluation/action research process about the the social and personal construction of the concept "Model-Based Instruction" by participants in our program.

First some background. Nine years ago our College of Education and Counseling restructured its undergraduate teacher education program around three professional semesters. As part of this restructuring process, Model-Based Instruction (MBI) was integrated into the curriculum and has become central to its operation. Students are introduced to MBI in the first professional semester (PSI); they use it extensively in the second (PSII) as a framework for planning and teaching lessons; and in the third (PSIII) they construct units and semester plans using MBI as one of the major planning principles. MBI was brought into the program through the collaborative efforts of university and school faculty working together on the restructuring process. It remains because those same groups still consider it a valid approach for describing what does and should go on in the classroom.

However, the concept of MBI that entered our program nine years ago is not

the same concept that exists today. It's meaning has changed over time through the planned and unplanned collaborations and interactions among campus faculty, students, and school faculty. In retrospect, it seems that the primary motivation for this change has been the need of all participants, program faculty and students, for a teaching framework that is valid in two, almost contradictory, senses: it must fit what "really happens in classrooms" and, at the same time, it must provide a "realistic target" for the on-going improvement of classroom instruction. Over the last nine years, this definition of validity (though perhaps not so cleanly defined) has served as a major evaluative criterion against which all definitions and applications of MBI have been tested. This testing, akin to hypothesis testing in a concept attainment lesson, has been done either formally in planned collaborative work settings or informally through workaday interactions; and it has resulted in modifications to MBI to render it more valid, to do both--to fit classroom realities and to provide a realistic target for teachers and pre-teachers to strive toward.

Thus, in this paper we'll meet our second and third purposes by reporting these changes and the different understandings of MBI. In short, at the social level it seems that this double-edged definition of validity has led us through three stages of concept development and into a fourth. At the individual level, program participants seem to fall into one of six categories that roughly reflect those stages.

Methods

Problem

Though diversity among individual conceptions of MBI should come as no surprise, it does come with some cost. In a program such as ours which champions a central organizing framework (such as MBI) such differences can have profound implications. A public school teacher with one concept of MBI, for example, will have different expectations than a student with another conception and/or a university supervisor who has another. Similarly two university instructors who

may believe they have the same concepts of MBI could, in fact, be teaching considerably different things and sending students out with different beliefs about what their instruction should look like. A host of other potential differences exist, and the cost, in short, is program coherence.

As a result, we set out to understand better the diverse conceptions of MBI held by the various participants in our program. The immediate goal of this project was to find out what they--students, other faculty members on campus, and teachers in the field--meant when they used the phrase Model-Based Instruction. The long range goals were (a) to use this information as a means of assessing our program to determine how well we've done in helping others construct valid and compatible understandings of MBI and (b) to plan program and/or concept modification and improvement that could lead to more compatible understandings and more powerful applications of MBI to all classroom instruction.

Participants and Procedure

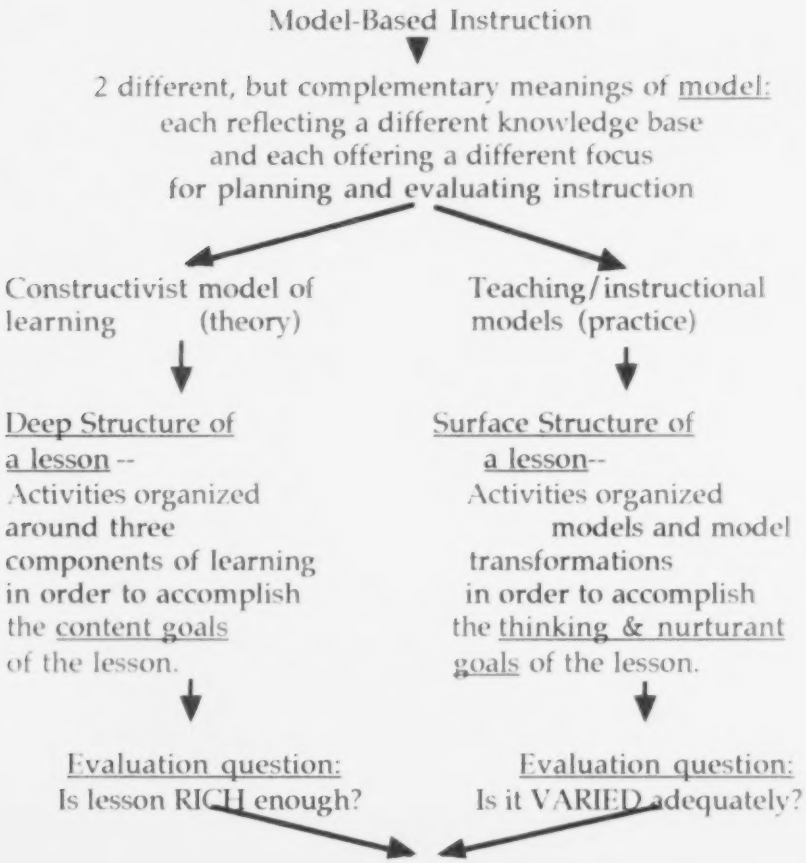
The population was the participants in the program--teachers in the field who worked with our students at the PSII and PSIII levels, teachers on campus who taught in the professional semesters, and students doing their student teaching (thus having completed PSII and the instructional component of PSIII). The sample drawn from the population was largely convenience. Busy and conflicting schedules precluded any attempts at random selection; but, to the extent possible, the individuals chosen were representative of the experience, subject area, and commitment diversity within our program. Each was interviewed individually by one of three university teachers, all members of the professional semester staff, and all interviews were recorded. One central questions began each interview and provided the theme that unified all other questions and discussions during the interviews: "What does MBI mean to you?" This question was restated early in the interview process along the lines of "If you were going to explain MBI to another

educator unaware of the concept, how would you explain it?" and "People have different understandings of MBI. We want to understand better what it means to you and how it influences your thinking in the classroom."

Data Analysis

Data were analyzed by the three researchers. In order to enhance the consistency of the analyses, the three discussed their understandings of MBI extensively and negotiated a shared understanding that can be summarized (in the narrative below) and visualized (on the next page) as follows:

> The word model in MBI refers to two different knowledge bases: (1) the models of human knowledge and learning found in the philosophy and psychology of Constructivism and (2) the models of instruction (or teaching models) like those cataloged in 1972 in Joyce and Weil's Models of Instruction and continued today in their fifth edition, as well as other model-based textbooks and related resources. These two knowledge bases--one offering cognitive models of how people learn and construct knowledge, the other a wide variety of teaching models that serve as blueprints for instruction--are labeled by the complementary concepts of deep structure and surface structure, concepts borrowed, rather loosely, from linguistics. From this perspective, the same stretch of instruction, such as a lesson or a unit, can be considered in terms of both its deep and surface structure. Indeed a basic premise of this MBI is that, for rich and varied instruction, every stretch of instruction must be. Focusing on the deep structure foregrounds the depth of instruction: Is it rich enough to help students through the stages of constructing knowledge? Focusing on surface structure foregrounds the context of instruction: Is it appropriately varied for the particular context in which it's being used? Taken together, they provide a powerful framework for planning, teaching, and evaluating all classroom instruction.



The mode of analysis was deductive in the sense that the above structure of ideas provided the framework from which data were analyzed. It was inductive in that the researchers brought with them no preconceived scheme for how different understandings of MBI would or should be categorized.

Results and Discussion

The results are summarized below under categories that correspond with the second and third purposes of this paper--to report on the social and personal

construction of the concept MBI by participants in our program. (Please note. This order, social then individual, has been used to make the paper presentation and subsequent discussions more coherent. It does not reflect the order in which data were analyzed. In fact, much of the retrospective analysis focusing on the social construction of the MBI concept was done before this action research was conducted. The data gathered during the study, however, allowed a sharper definition of the stages which follow.)

Social Construction of MBI

In retrospect, it seems this social construction of a concept has gone through three stages of concept development and is now in its fourth.

Stage 1. In the early days of our program, most interpreted MBI to mean something like "teaching lessons based on instructional models." However, over time this definition failed both criteria of the validity test. It didn't fit because much that went on in classrooms didn't match the blueprints outlined by Joyce, Weil, and others. Moreover, this definition provided an unrealistic target. Even though model-based lessons were still an ideal supported by our center teachers, it appeared this was a relatively unattainable goal. It was apparently impossible, even for experienced teachers, to regularly use models as a basis for planning and teaching all of their lessons.

Stage 2. What emerged to resolve this conflict was a more articulated recognition of what was already commonly known and said: In real teaching models get changed around a lot; they get "transformed." To provide language for this accepted notion, we invented a taxonomy of transformations. For example, models get "combined," steps get "deleted," one model gets "embedded" in another, a lesson more or less based on a model can be "stretched" over several days or "stacked" with other lessons, and so on. This informal taxonomy was liberating. The fit was better. Education students, for example, would visit a civics class on Thursday and find students working the whole hour in groups or individually writing reports or watching a video and realize that they were only seeing one or two activities in a lesson that had been stretched over several days. And the target was more realistic. Gone was the restrictive misconception that MBI meant that lessons always be taught "purely" following steps outlined in an education text, and gone too was the more pernicious "one lesson per class period" misconception, a view that left teachers and students numbed at the prospect of planning thirty or so full model-based lessons every week.

Stage 3. What remained, though, was a pervasive sense that activities in good lessons--even when they couldn't be partitioned around the steps of a model, transformed or otherwise--were organized around a fundamental and essential structure that led to learning. This structure came to be known as the deep structure of a lesson (as opposed to the surface structure defined by instructional models) and, extrapolating from constructivist and cognitive theory, we claimed a three part deep structure: contexting, comprehending, and learning. This too fit. All agreed that good lessons depend upon certain existing knowledge being activated (contexting) and somehow being changed (learning), and somewhere in between there is a learner trying to make sense out of things (comprehending). And it was a realistic target. Lessons, if they are to work, must have these three components. As before, this process of resolving a conceptual conflict led to a more valid concept of MBI.

Stage 4.As might be expected, the seeds of change are already within the stage 3 version of MBI. For one, the concept of transformations begins to break down the line between lessons and units since it allows, for example, something spread over several days with several sub-lessons embedded within it, to still be called a lesson. In addition, the concepts of deep and surface structure disturb the stability even further. Focusing on the deep structure, asking is a lesson "rich enough?," always leads to the answer "it depends." The learning component of a single physic lesson on levers, for example, may seem woefully inadequate unless viewed in the context of other lessons where leverage will be returned to, restructured, and reapplied in different situations. In other words, to be understood and evaluated (and planned) lessons must be seen in a hierarchy of contexts. Lessons, don't stand alone. Finally, MBI is becoming more than a framework for planning and evaluating lessons. It seems to apply equally well to longer stretches of instruction such as units, and they too can be discussed in terms of deep and surface structure.

This is not to say that nine years ago all the participants in our program--the university faculty, school faculty, and the students--believed that MBI only meant teaching lessons based on models, nor that today all would be able to articulate the fourth stage let alone use it as a natural frame for planning and evaluating classroom instruction. What is being said, though, that at different stages certain understandings of MBI seemed most pervasive. Observation forms used, comments by teachers, what students talked about during their exit interviews, etc.--

all served as signs pointing toward how this community saw MBI.

It is our belief that MBI is now a more valid concept in our program than it was nine years ago. We also belief that this developing fourth stage will likely coalesce and, subject to repeated tests of validity, give way to a fifth. This is how ideas are constructed within a professional community, and our only real danger is that MBI (or what may replace it) become reified through pride or ignorance.

Personal Construction of MBI

Protocol gathered from individual program participants--students, center teachers, and teachers on campus--could generally be sorted into one of the following six concept-based categories with fundamental agreement among the three researchers. It should be noted that the concepts are listed and described in sets of two below. This form supports the similarities that exist between the two concepts in each pair, as well as highlights their differences, but it also reflects a hesitancy on our part to imply an ascending order of concept sophistication beyond the three broad groupings below.

Concepts 1 and 2--Single Structure Concepts (surface or deep structure). The most common manifestation of this stage is the view that MBI means teaching lessons based on models with models being a reference to instructional models. An alternative manifestation is that MBI is finally just the idea that every lesson has to have three parts--contexting, comprehending, and learning. The difference between these two understandings of MBI, of course, is that the first reflects complete focus on surface structure, the second on deep structure. What they have in common is that both ignore the dual nature of MBI, reducing it to one meaning of the word model.

These two concepts tend to lead to different actions and attitudes in the classroom. A surface structure focus leads to the idea that you're only using MBI when you're teaching lessons based on models. The rest of the time you're doing something else. This view, especially when it's coupled with the idea that each class period is a whole lesson, can lead practicing teachers to the position that--even though undergraduates should learn and practice MBI--it's impossible to use MBI in the real world. After all, who could prepare 25-30 model-based lessons a week? (It should be added that we think some people in this stage operate on a "pick and choose" level. That is, they don't

really see themselves "using the models," but "picking and choosing different steps from different models." This could be their practical strategy for making MBI a more realistic concept.)

In contrast, people holding the second concept tend to believe they're using MBI all the time. In part, this is based on their deep structure focus and the belief that every lesson needs the three basic components and that, in fact, lessons of experienced teachers would tend to always be based on this structure. It's also based on a looser concept of surface structure allowing that virtually any lesson resembles some model that teachers tend to adapt unconsciously to the classroom setting.

The lesson goals most often articulated by those holding one or the other of these concepts vary somewhat, but they tend to favor directions consistent with the choice of structure. That is, those who focus on surface structure typically talk about the need for variety in teaching, implying an emphasis on non-content goals. In contrast, those with a deep structure focus are typically very articulate about the "richness" of lessons, that is, whether they lead to enough processing for students to learn what the teacher considers content and cognitive goals. (It should be added that there was a range in how deep this concern for learning really ran. Some we interviewed were deeply concerned about whether students were learning and how rich their lessons were; others seemed to treat the three components as simply three steps in a lesson.)

Concepts 3 and 4--Transformations and Hierarchy (w/ single structure, deep or surface) MBI becomes a more flexible and usable framework when the notion of transformations is integrated with one's concept of MBI. Within the limits of the first two concepts discussed above (surface or deep emphasis), transformations probably came most naturally to those who focused on deep structure and expressed a truly deep commitment to student learning. The most common transformations talked about by those with this view were "stretching" lessons over more than one day or "stacking" several lessons under one comprehensive learning component, transformations which tend to originate from a need to make lessons rich enough to lead to "real" learning,

A focus on surface structure was likewise coupled with transformations by some, especially transformations of combining or embedding one model in another to provide appropriate variety as well as depth. These transformations might account for lessons that are "model-like" but not quite fitting any particular model. These lessons nevertheless maintain the integrity of deep structure as opposed to the kind of picking and choosing which characterizes the earlier concepts.

Eventually the notion of transformations leads to (or results from) a sense of hierarchy. This is especially true from a deep structure emphasis where lessons, when viewed in the context of other lessons, take on hierarchical rankings of being coordinate, superordinate, or subordinate with

other lessons. This hierarchy of lesson design is accompanied by a sense that lesson goals are likewise hierarchically structured with some, such as punctuating introductory sentence elements, are subordinate to larger goals or being able to write well and communicate effectively. This sense of a goal structure also leads to (or results from) a sense of larger goals, such as school outcomes, which inform teachers' planning and teaching lessons. Typically, this sense of the "big picture" stood in contrast with those who held concepts 1 and 2 and tended to talk about daily goals without many indicators of being driven by more comprehensive goal structures.

Concepts 5 and 6--Integrated and Comprehensive (w/ deep structure leaning or totally integrated view) People who held these concepts had integrated deep and surface structure into their understandings of MBI and had likewise integrated the ideas of transformations and hierarchy, ideas which led to MBI being applied to units as well as lessons. To the extent that images (let alone terse narrative summaries such as these) can capture the complexity of a concept, the visual on page seven of this paper provides a holistic view. Not explicit in that visual, though, is an awareness of larger goals such as school outcomes which, as mentioned in the discussion of concepts 4 and 5, accompany an hierarchical view of lesson design and goals. It is, in fact, this broader awareness which we've used to distinguish between a concept 5 or 6. (The distinction, admittedly, is a fine one and tentative.)

Some people's sense of larger goals seems to be grounded in the major goals of their subject area, goals such as those often articulated in state content standards for example. Other people seem to have in mind more non-content goals when they're talking about the "big picture"--school outcomes, for example, especially those that emphasize the knowledge, skills, and dispositions needed for lifetime learning. This latter perspective, we conjecture, leads to a more integrated view of MBI. Those who articulate this perspective not only bring surface and deep structure together with a sophisticated sense of hierarchy, they also incorporate such matters as student motivation, self-efficacy, etc. into their concept of MBI. These teachers believe that the very structure of MBI leads not only to better content knowledge but also contributes to lifelong learning goals as they are defined in school outcomes.

Conclusion

We'll conclude by returning to the first purpose of this session and report how we have been using the results of this study/evaluation in our own program evaluation. Although this follow-up is still in progress, several observations have been made and some tentative conclusions drawn:

--There is some relationship between when a practicing teacher entered our

program and his/her concept of MBI, but this no means a perfectly linear or dependable relationship.

--Upon critical examination, we've found that some forms and practices used in our program (such as student observation forms) tend to promote concepts of MBI which don't parallel the concept being taught in class.

--The structure of the second professional semester (PSII) was based on and reinforced earlier concepts of MBI. New organizational patterns are being tried during the 1998-1999 academic year.

Finally, it should be added that perhaps the biggest gain from this survey/study was a reminder that MBI is only a concept and that we are the ones constructing that concept, infusing it with meaning, and generating its applications. Moreover, we also know that as long as we stay actively involved with it, continually testing it against our workaday realities, it will continue to grow and change and provide a better fit and target for what we are doing. MBI is a powerful and comprehensive framework only because we've collaboratively made it one.